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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,605	01/24/2002	Ling-Yi Chuang	3158/US62US1	3125
7590	12/17/2003			

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EXAMINER
MUSSER, BARBARA J.

ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/057,605

Applicant(s)

CHUANG ET AL.

Examiner

Barbara J. Musser

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Flip Chip Technologies.

Flip Chip Technologies discloses a method known as Sharp's method(pg. 327) for bonding chips wherein particles are applied to two bonding portions of one substrate, an adhesive is applied to another substrate having two bonding portions, and the substrates are joined together such that the bonding portions contact.(Figures 10.8-10.9) It is noted that Mitsubishi's method on p.329 also appears to fully meet applicant's claim. While the reference does not expressly state the particles connect the bonding portions on one substrate to the bonding portions on the other substrate, one in the art would understand that for an electrical connection to be formed as is intended by the reference, the particles would have to contact both the bonding portions on one substrate and the bonding portions on the other substrate. Alternatively, it would

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have been obvious to one of ordinary skill in the art at the time the invention was made to contact the particles applied to the bonding portion of one substrate to the bonding portions of the other substrate since this would form an electrical path as is the purpose of the particles and adhesive.

While the reference does not expressly state the adhesive is clamped between the two substrate, one in the art would understand that the only way to form a path between the two substrate would be to press them together as is suggested in Figure 10.9, thus clamping the adhesive between the layers. Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to clamp the adhesive layer between the two substrates since this would force the layers together such that the articles would contact both sets of bonding portions forming an electrical connection between the substrates as is desired in the process.

Regarding claim 4, Figure 10.8 describes the particles as conductive.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flip Chip Technologies as applied to claim 1 above, and further in view of Yamada et al. (U.S. Patent 5,965,064)

Regarding claim 2, Flip Chip Technologies does not disclose the bonding portions are bumps, but rather describes them as pads. Yamada et al. discloses that bumps and pads are well-known alternatives in the art since the reference appears to interchange the terms.(Col. 10, ll. 36-41) It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the particles to either the bumps or the terminals as the two perform the same function and since the bumps are made of a material that can flow at high temperatures.

Regarding claims 3 and 5, Flip Chip Technologies does not disclose the specifics of what the bumps and particles are made of. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any conventional materials such as those disclosed in Yamada et al. since such are well-known and conventional bump and particle materials. Since the circuitry of Yamada et al., which includes the terminals, is plated with gold, and since the particles are made of nickel, the particles would have a hardness greater than that of the bumps since nickel is harder than gold.(Col. 14, ll. 26-28; Col. 4, ll. 49)

Regarding claim 6, Flip Chip Technologies is silent as to the type of adhesive. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any well-known and conventional adhesive which has been used in this type of device previously such as rubber, which Yamada et al. discloses can be used as the adhesive when connecting two substrates using particles.(Col. 4, ll. 27)

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Barbara J. Musser** whose telephone number is (571) 272-1222. The examiner can normally be reached on Monday-Thursday; alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


BJM


JEFF H. AFTERGLUT
PRIMARY EXAMINER
GROUP 1300